Poor Functional Performance Following Bidirectional Dilatation of Severe Post Radiation Oesophageal Stricture

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ABSTRACT

Objective: To assess the efficacy of bidirectional oesophageal dilation (BED) in the severely strictured oesophagus induced by radiation therapy following the treatment of head and neck malignancies.

Study design: Case series.

Setting: Tertiary Cancer Center.

Subject and Methods: Retrospective analysis of patients who underwent BED for oesophageal stricture secondary to radiation therapy for head and neck malignancies over a 5-year period. The parameters of the primary tumour, evaluation of preoperative and postoperative oesophageal dysfunction and complications of the procedure were evaluated.

Results: There were 9 episodes of BED among 5 patients with complete or severe oesophageal obstruction. Mean age was 63 years. The procedure was uneventful in all but 1 who was found to have postoperative mediastinitis, and healed completely. Four patients had persistent dysphagic symptoms despite post dilatation video fluoroscopy failing to reveal any significant narrowing of the oesophageal lumen.

Conclusion: BED for severe chemoradiation-induced oesophageal strictures is efficacious in improving luminal patency but ineffective in relieving functional dysphagia.

INTRODUCTION

Pharyngo-oesophageal stenosis manifesting as dysphagia and odynophagia is common in patients who receive radiotherapy for laryngeal and hypopharyngeal cancers, occurring in approximately 20% of these patients. Severe or complete stenosis can be found in 5% of cases leading to an inability to swallow saliva (1). Management of these difficult cases usually includes oesophageal dilatations. However, due to suboptimal visualization of the stricture, uncontrolled endoscopic antegrade dilatation is usually unsuccessful and potentially very hazardous with a high risk of creating a false lumen followed by imminent mediastinitis, neck abscess or sepsis.

There is increasing evidence to support bidirectional oesophageal dilatation as a feasible and safe technique for managing severe pharyngo-oesophageal strictures (2). This technique is feasible in patients with percutaneous endoscopic gastrostomy (PEG) tubes. However, many patients require further dilatations for persistent dysphagia. This raises the question as to whether it is feasible to deal with severe radiation induced oesophageal strictures with mechanical dilatations. We aim to assess the efficacy of endoscopic bidirectional dilatation in relieving severe dysphagic symptom experienced by these patients.

METHODS AND MATERIALS

A retrospective study was carried out on patients with post radiation induced pharyngo-oesophageal severe stricture admitted to our Cancer Centre for dilatation from January 2005 to December 2009. Included were patients who had received radical chemoradiationtherapy to the neck for the treatment of pharyngo-laryngeal carcinomas and had complete tumour response at the site of the primary. All patients had PEG tube insertion for nutritional supplementation during their course of treatment. The severity of these strictures was proven by fluoroscopy preoperatively in all patients, and reevaluated thereafter.

SURGICAL TECHNIQUE

A rigid oesophagoscope was inserted under general anesthesia first to the hypopharynx by the otolaryngologist in an attempt to assess the location and severity of the stenosis. The upper GI surgeon started to approach the stenosis from below using a paediatric gastroscope (Olympus GIF-XP 160) with an accessory channel (figure 1).

The area of stenosis was approached and evaluated from the superior and interior aspects with each surgeon relying on the visualization of transillumination from the light of the other scope, after which the upper GI surgeon passed a guide wire superiorly through the stenotic opening (Figure 2).

From the cranial end, the guide wire was grasped and pulled out through the mouth by the otolaryngologist. Bougie dilators were sequentially passed over the guide wire starting from the smallest size of 8 French up to the largest deemed safely possible, usually 16 French (Fig 3,4).

RESULTS

Bidirectional oesophageal dilatation was performed in 5 cases (table 1). Three patients were treated surgically with radical intent followed by chemotherapy and/or radiotherapy, and 2 patients received radical chemoradiotherapy. Bidirectional assessment and subsequent endoscopic dilatation was feasible in all cases but in one case as thick membrane was encountered from above and below without a safe option to rupture it. Only one patient developed mediastinitis due to oesophageal microperforations which settled down quickly with conservative treatment.

Post-operative video fluoroscopy was performed in 4 patients demonstrating markedly and maintained improved patency of the pharyngo-oesophageal segment in all cases except the case with the unruptured membrane. No luminal narrowing was demonstrated in 2 cases and significant improvement was observed in the third patient (Figure 5). However, pharyngeal dysmotility presumably arising from the effects of radiation was suspected during the dynamic swallowing test in all patients (Figure 6). Four patients reported some improvement in swallowing ability, including those 3 patients in which no obstruction was demonstrated on video fluoroscopy.

DISCUSSION

Most of the published data on the use of the bidirectional oesophagoscopy with dilatation in the management of pharyngo-oesophageal strictures focused on describing the technique itself, showing a high success rate of ability to widen the strictured area with an acceptably low rate of complication (3).

We present our experience using this technique for the treatment of obstructed oesophagus. In these cases there is likely massive fibrosis of the soft tissue in the irradiated neck, including the pharyngeal and oesophageal musculature15 resulting in anchoring the viscera involved in the swallowing process including the stricatured oesophagus. We suspect that these changes contribute significantly to the oesophageal dysmotility reported in these patients, and the patients’ symptoms of continued severe dysphagia. In addition, radiation induced neuropathy and direct damage to the muscle might serve as a cause of the observed dysmotility(4).

We would therefore caution against the use of this complicated and potentially dangerous procedure in these highly complex patients where the procedure may result in a good anatomic but in our hands a poor functional result.

CONCLUSIONS

Combined antegrade and retrograde dilatation of complete or near complete oesophageal stricture secondary to radiotherapy is safer than performing unidirectional dilatation; however, in spite of a well proven and maintained opening oesophageal lumen as per post-operative fluoroscopy, most of our patients reported persisting dysphagic symptoms, presumably due to post chemoradiotherapy changes resulting in functional dysphagia.

REFERENCES


Table 1.

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Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6